AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): An optimum command producing apparatus configured to receive a command, process the command in such a manner that a controlled object implements a desirable operation and output an optimum command value to a servo control apparatus, the apparatus comprising:

an N-order filter processing section configured to carry out an N-order filter processing for the command and calculate values from a 1st order differential value to an $(N-1)^{th}$ order differential value of the command subjected to the filter processing, wherein N is an integer of 2 or more; and

an arithmetic unit configured to calculate a value obtained by multiplying each of the values calculated by the N-order filter processing section by a corresponding one of gains, and

wherein N is set to be equal to or greater than a value defined by subtracting an order of the command from an order of denominator of a transfer function of an approximation model that represents the controlled object with Laplace operator.

2. (currently amended): An optimum command producing apparatus configured to receive a command, process the command in such a manner that a controlled object implements a desirable operation and output an optimum command value to a servo control apparatus, the apparatus comprising:

an N-order filter processing section configured to carry out an N-order filter processing for the command and calculating values from a 1^{st} order differential value to an $(N-1)^{th}$ order differential value of the command subjected to the filter processing, wherein N is an integer of 2 or more;

an arithmetic unit configured to calculate a value obtained by multiplying each of the values calculated by the N-order filter processing section by a corresponding one of gains; and

an M-order filter processing section configured to perform an M-order filter processing the value calculated by the arithmetic unit wherein M is an integer of 1 or more,

wherein N is set to be equal to or greater than a value defined by subtracting an order of the command from an order of denominator of a transfer function of an approximation model that represents the controlled object with Laplace operator.

3. (currently amended): An optimum command producing apparatus configured to receive a command, process the command in such a manner that a controlled object implements a desirable operation and output an optimum command value to a servo control apparatus, the apparatus comprising:

an N-order filter processing section configured to carry out an N-order filter processing for the command and calculate values from a 1^{st} order differential value to an L^{th} order differential value of the command subjected to the filter processing, wherein N is an integer of 2 or more and L is an integer of 1 or more; and

an arithmetic unit configured to multiply each of the values calculated by the N-order filter processing section by a corresponding one of gains, and then sum all of the resulting products,

wherein L is an order of denominator of a transfer function of an approximation model that represents the controlled object with Laplace operator, and

wherein N is set to be equal to or greater than a value defined by subtracting an order of the command from L.

4. (canceled)

5. (previously presented): The optimum command producing apparatus according to any one of claims 1 to 3, wherein a recursive type filter or a non-recursive type filter is used for the N-order filter.

6. (previously presented): The optimum command producing apparatus according to any one of claims 1 to 3, wherein the optimum command value is one of a position command, a speed command, an acceleration command and a torque command or a combination thereof.